IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION

WSOU INVESTMENTS, LLC d/b/a BRAZOS LICENSING AND DEVELOPMENT, Plaintiff, v. DELL TECHNOLOGIES INC., DELL INC., EMC CORPORATION, AND VMWARE, INC. Defendants.	§ § § § § § § § § § § §	CIVIL ACTION NO. 6:20-cv-485 **JURY TRIAL DEMANDED**

ORIGINAL COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff WSOU Investments, LLC d/b/a Brazos Licensing and Development ("Brazos" or "Plaintiff"), by and through its attorneys, files this Complaint for Patent Infringement against Dell Technologies Inc., Dell Inc., EMC Corporation, and VMWare, Inc. (collectively, "Defendants") and alleges:

NATURE OF THE ACTION

1. This is a civil action for patent infringement arising under the Patent Laws of the United States, 35 U.S.C. §§ 1, et seq., including §§ 271, 281, 284, and 285.

THE PARTIES

2. Brazos is a limited liability corporation organized and existing under the laws of Delaware, with its principal place of business at 605 Austin Avenue, Suite 6, Waco, Texas 76701.

3. On information and belief, defendant Dell Technologies Inc. ("Dell") is a Delaware corporation with a principal place of business at One Dell Way, Round Rock, Texas 78682.

4. On information and belief, defendant Dell Inc. is a Delaware corporation with a principal place of business at One Dell Way, Round Rock, Texas 78682. Dell Inc. is wholly owned by its corporate parent, Dell.

5. On information and belief, defendant EMC Corporation ("EMC") is a Massachusetts corporation with a principal place of business at One Dell Way, Round Rock, Texas 78682. EMC Corporation is wholly owned by its corporate parent, Dell Technologies Inc.

6. Upon information and belief, VMware, Inc. ("VMWare") is a Delaware corporation with two established places of business in this District, including two in Austin, Texas with over 700 employees.

7. Upon information and belief, VMWare was acquired by EMC in 2004 and conducted an initial public offering of Class A common stock in August 2007. On or around September 2016, Dell acquired by EMC. As a result, EMC became a wholly-owned subsidiary of Dell, and VMWare became an indirectly-held, majority-owned subsidiary of Dell. Under the rules of the New York Stock Exchange, VMWare is a controlled company. As of January 31, 2020, Dell controlled approximately 80.9% of VMWare's outstanding common stock, including 31 million shares of its Class A common stock and all of it Class B common stock.

JURISDICTION AND VENUE

8. This is an action for patent infringement which arises under the Patent Laws of the United States, in particular, 35 U.S.C. §§ 271, 281, 284, and 285.

9. This Court has jurisdiction over the subject matter of this action under 28 U.S.C. §§ 1331 and 1338(a).

10. This Court has specific and general personal jurisdiction over each defendant pursuant to due process and/or the Texas Long Arm Statute, because each defendant has committed

acts giving rise to this action within Texas and within this judicial district. The Court's exercise of jurisdiction over each defendant would not offend traditional notions of fair play and substantial justice because each defendant has established minimum contacts with the forum. For example, on information and belief, each defendant has committed acts of infringement in this judicial district, by among other things, selling and offering for sale products that infringe the asserted patent, directly or through intermediaries, as alleged herein.

11. Venue in the Western District of Texas is proper pursuant to 28 U.S.C. §§1391 and/or 1400(b). Each defendant has established places of business in the Western District of Texas. Each defendant is registered to do business in Texas. Upon information and belief, each defendant has transacted business in this District and has committed acts of infringement in this District.

COUNT ONE - INFRINGEMENT OF U.S. PATENT NO. 7,636,309

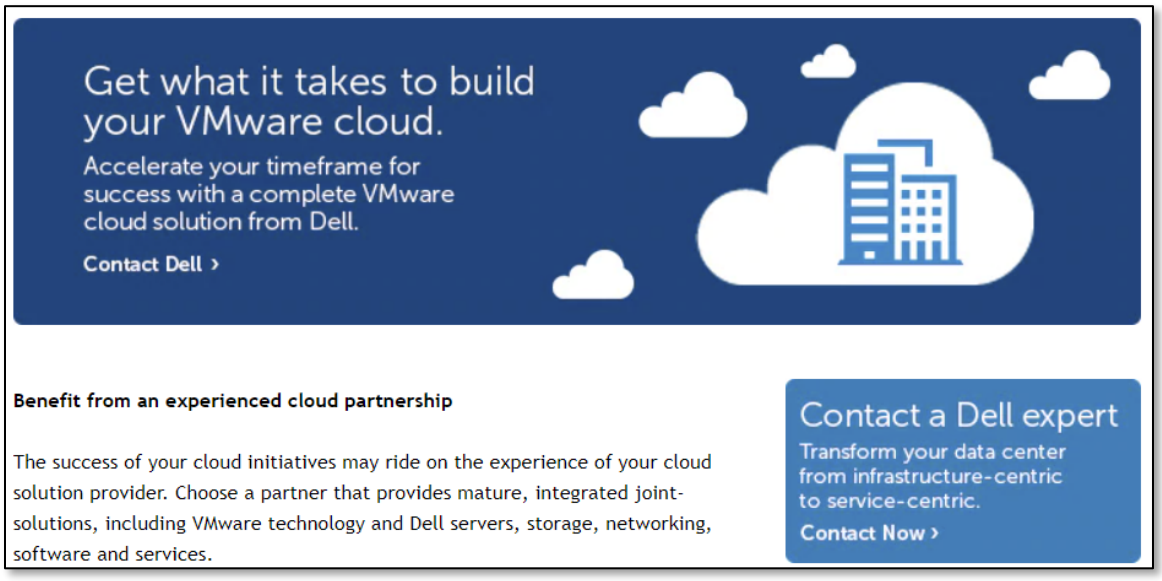
12. Brazos re-alleges and incorporates by reference the preceding paragraphs of this Complaint.

13. On December 22, 2009, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 7,636,309 ("the '309 Patent"), entitled "Multi-Path Routing Using Intra-Flow Splitting." A true and correct copy of the '309 Patent is attached as Exhibit A to this Complaint.

14. Brazos is the owner of all rights, title, and interest in and to the '309 Patent, including the right to assert all causes of action arising under the '309 Patent and the right to any remedies for the infringement of the '309 Patent.

15. Defendants make, use, sell, offer for sale, import, and/or distribute in the United States, including within this judicial district, products such as, but not limited to, cloud-related solutions, including but not limited to, devices incorporating VMware's VeloCloud solutions and

SD-WAN software, such as Dell EMC SD-WAN Edge 600 series products (collectively, the "Accused Products").

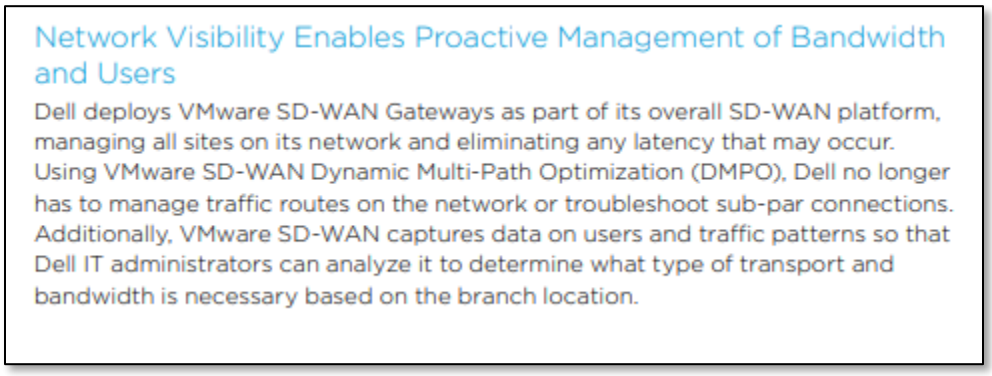


https://www.dell.com/learn/us/en/15/solutions/vmware-vcloud

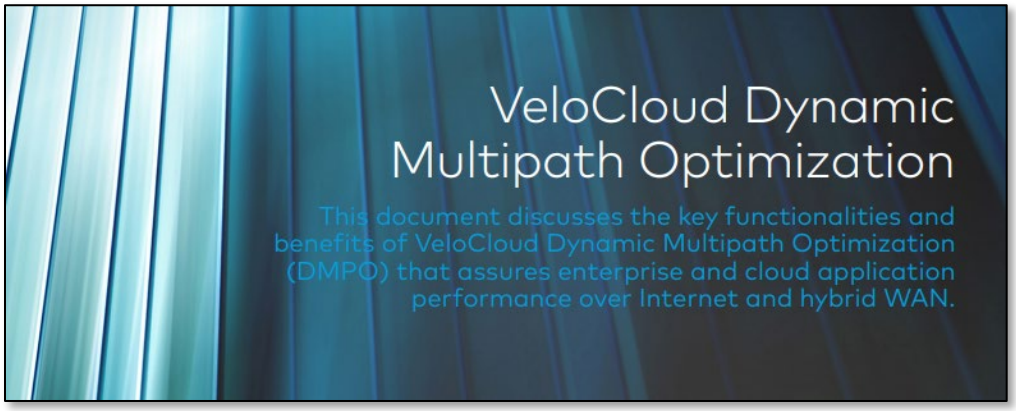
https://www.delltechnologies.com/en-us/networking/sd-wan-solution/index.htm

16. The Accused Products have a variety of features and capabilities including Dynamic Multipath Optimization (DMPO) technology. VMware SD-WAN processing of traffic flows at a node in a network can provide packet level redirection. This allows one or multiple physical WAN links to be abstracted and virtualized packet-by-packet. Path selection and remediation techniques can be applied in virtually real-time. Dynamic load-sharing maintains end-

customer application performance quality, regardless of the reliability or consistency of the individual physical link.



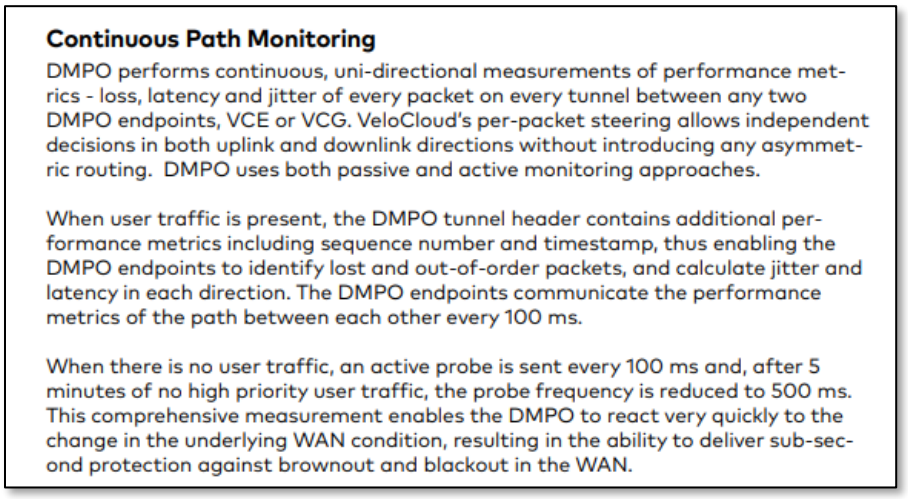
https://www.velocloud.com/content/dam/digitalmarketing/velocloud/en/documents/case-study-dell-emc.pdf



https://technologyleadership.academy/wp-content/uploads/2019/08/SDWAN-velocloud-benefits-DynamicMultipathOptimization.pdf

17. DMPO can perform continuous, uni-directional measurements of performance metrics (for example, loss, latency, and jitter) of every packet obtained from multiple flows on

every tunnel between any two DMPO endpoints, VeloCloud Edge (VCE), or VeloCloud Gateway (VCG).



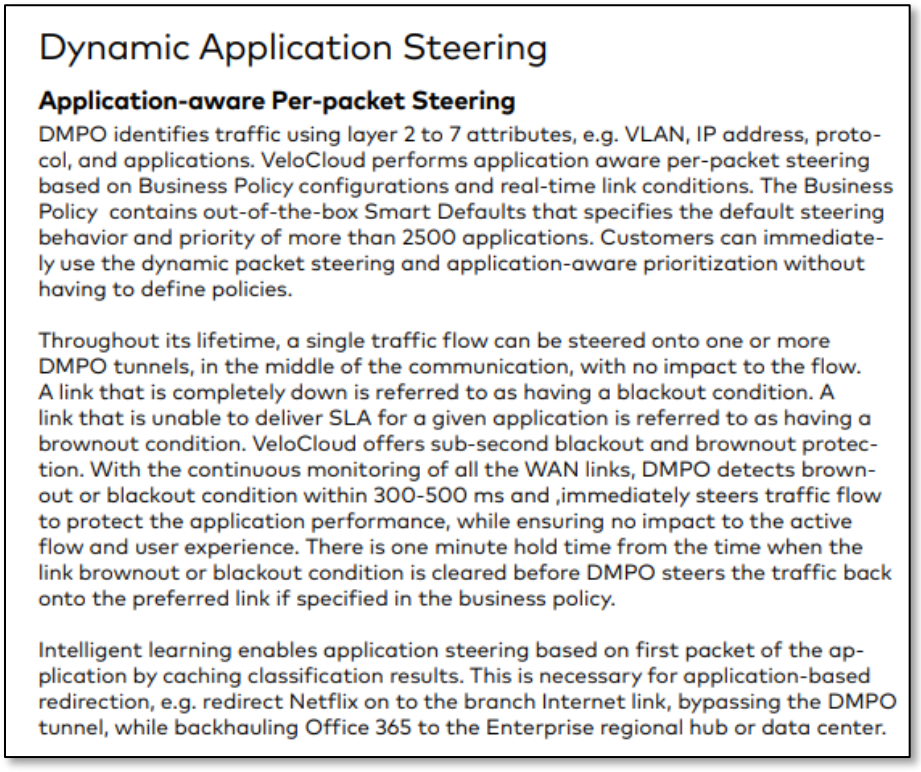
Continuous Path Monitoring

DMPO performs continuous, uni-directional measurements of performance metrics - loss, latency and jitter of every packet on every tunnel between any two DMPO endpoints, VCE or VCG. VeloCloud's per-packet steering allows independent decisions in both uplink and downlink directions without introducing any asymmetric routing. DMPO uses both passive and active monitoring approaches.

When user traffic is present, the DMPO tunnel header contains additional performance metrics including sequence number and timestamp, thus enabling the DMPO endpoints to identify lost and out-of-order packets, and calculate jitter and latency in each direction. The DMPO endpoints communicate the performance metrics of the path between each other every 100 ms.

When there is no user traffic, an active probe is sent every 100 ms and, after 5 minutes of no high priority user traffic, the probe frequency is reduced to 500 ms. This comprehensive measurement enables the DMPO to react very quickly to the change in the underlying WAN condition, resulting in the ability to deliver sub-second protection against brownout and blackout in the WAN.

https://technologyleadership.academy/wp-content/uploads/2019/08/SDWAN-velocloud-benefits-DynamicMultipathOptimization.pdf



Dynamic Application Steering

Application-aware Per-packet Steering

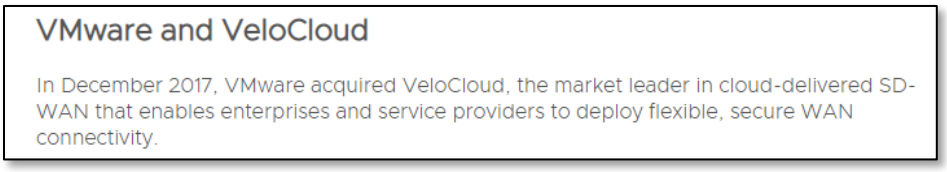
DMPO identifies traffic using layer 2 to 7 attributes, e.g. VLAN, IP address, protocol, and applications. VeloCloud performs application aware per-packet steering based on Business Policy configurations and real-time link conditions. The Business Policy contains out-of-the-box Smart Defaults that specifies the default steering behavior and priority of more than 2500 applications. Customers can immediately use the dynamic packet steering and application-aware prioritization without having to define policies.

Throughout its lifetime, a single traffic flow can be steered onto one or more DMPO tunnels, in the middle of the communication, with no impact to the flow. A link that is completely down is referred to as having a blackout condition. A link that is unable to deliver SLA for a given application is referred to as having a brownout condition. VeloCloud offers sub-second blackout and brownout protection. With the continuous monitoring of all the WAN links, DMPO detects brownout or blackout condition within 300-500 ms and ,immediately steers traffic flow to protect the application performance, while ensuring no impact to the active flow and user experience. There is one minute hold time from the time when the link brownout or blackout condition is cleared before DMPO steers the traffic back onto the preferred link if specified in the business policy.

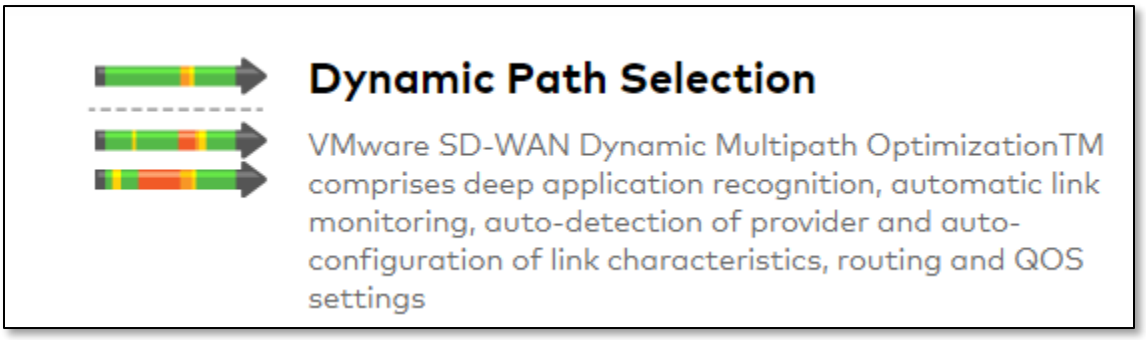
Intelligent learning enables application steering based on first packet of the application by caching classification results. This is necessary for application-based redirection, e.g. redirect Netflix on to the branch Internet link, bypassing the DMPO tunnel, while backhauling Office 365 to the Enterprise regional hub or data center.

https://technologyleadership.academy/wp-content/uploads/2019/08/SDWAN-velocloud-benefits-DynamicMultipathOptimization.pdf

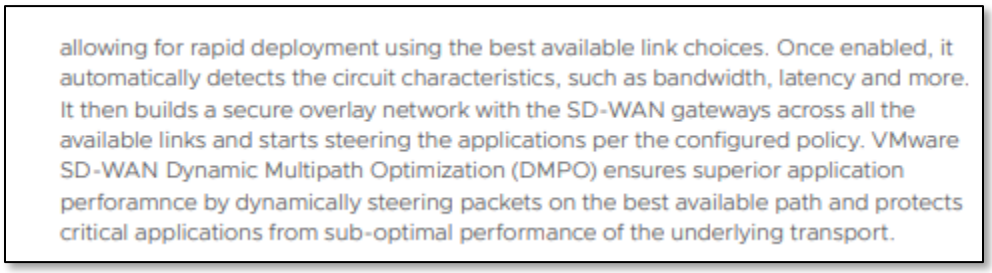
18. The Accused Products perform splitting traffic flows using application-aware per-packet steering based on Business Policy configurations and real-time conditions to route the packets on the best available path. Packets of multiple applications may be steered on a per-packet basis onto one or more DMPO tunnels.



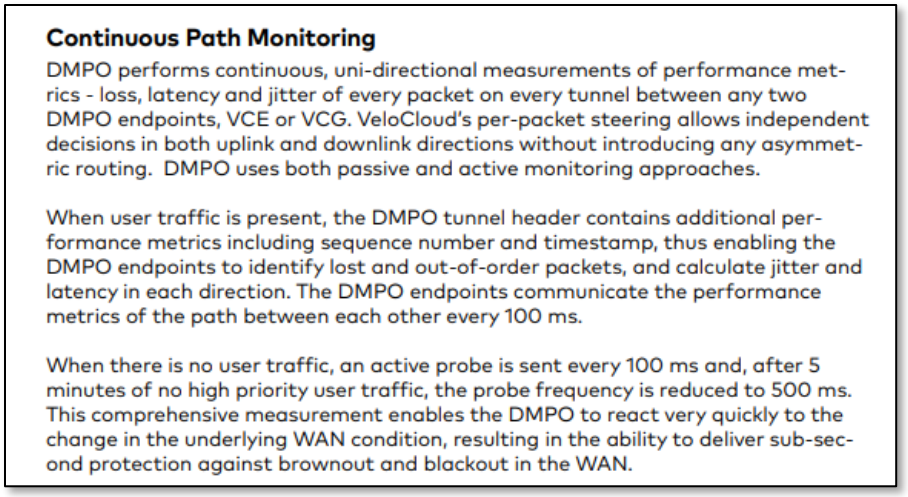
https://www.vmware.com/company/acquisitions/velocloud.html



https://www.velocloud.com/products/features



https://www.velocloud.com/content/dam/digitalmarketing/velocloud/en/documents/solution-overview-service-providers.pdf



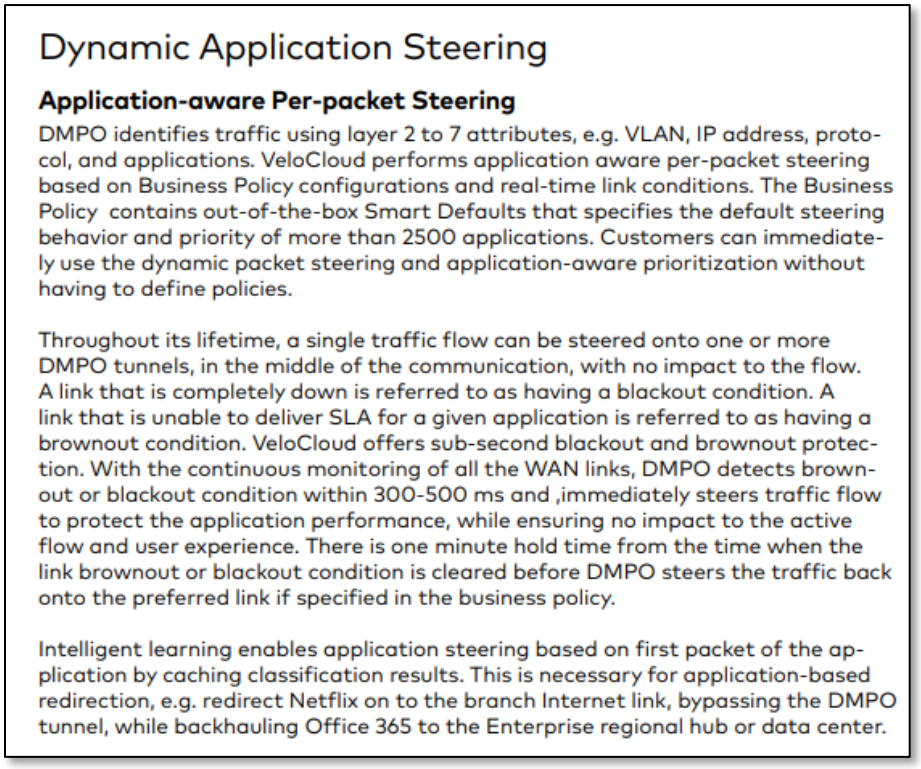
Continuous Path Monitoring

DMPO performs continuous, uni-directional measurements of performance metrics - loss, latency and jitter of every packet on every tunnel between any two DMPO endpoints, VCE or VCG. VeloCloud's per-packet steering allows independent decisions in both uplink and downlink directions without introducing any asymmetric routing. DMPO uses both passive and active monitoring approaches.

When user traffic is present, the DMPO tunnel header contains additional performance metrics including sequence number and timestamp, thus enabling the DMPO endpoints to identify lost and out-of-order packets, and calculate jitter and latency in each direction. The DMPO endpoints communicate the performance metrics of the path between each other every 100 ms.

When there is no user traffic, an active probe is sent every 100 ms and, after 5 minutes of no high priority user traffic, the probe frequency is reduced to 500 ms. This comprehensive measurement enables the DMPO to react very quickly to the change in the underlying WAN condition, resulting in the ability to deliver sub-second protection against brownout and blackout in the WAN.

https://technologyleadership.academy/wp-content/uploads/2019/08/SDWAN-velocloud-benefits-DynamicMultipathOptimization.pdf



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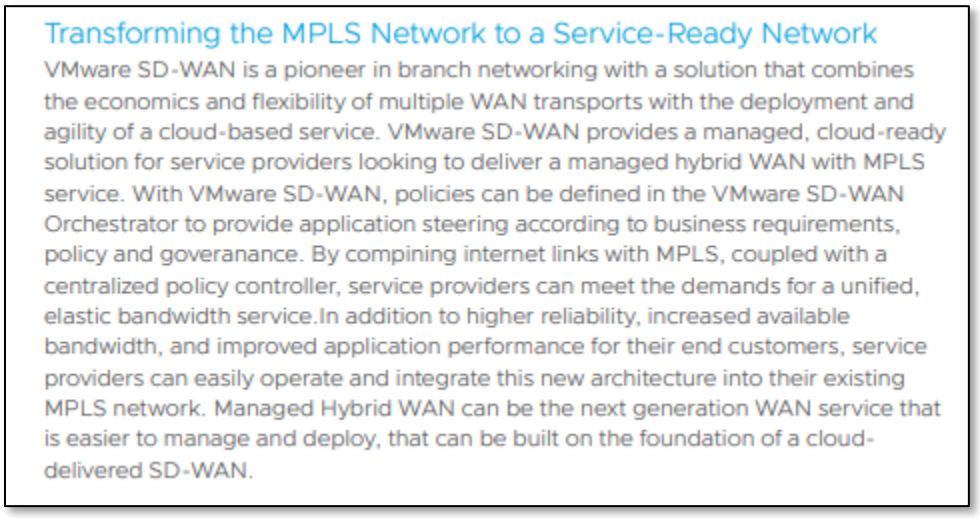
https://technologyleadership.academy/wp-content/uploads/2019/08/SDWAN-velocloud-benefits-DynamicMultipathOptimization.pdf

19. The Accused Products can provide a branch networking solution that combines the economics and flexibility of multiple WAN transports. Packets belonging to multiple flows can be

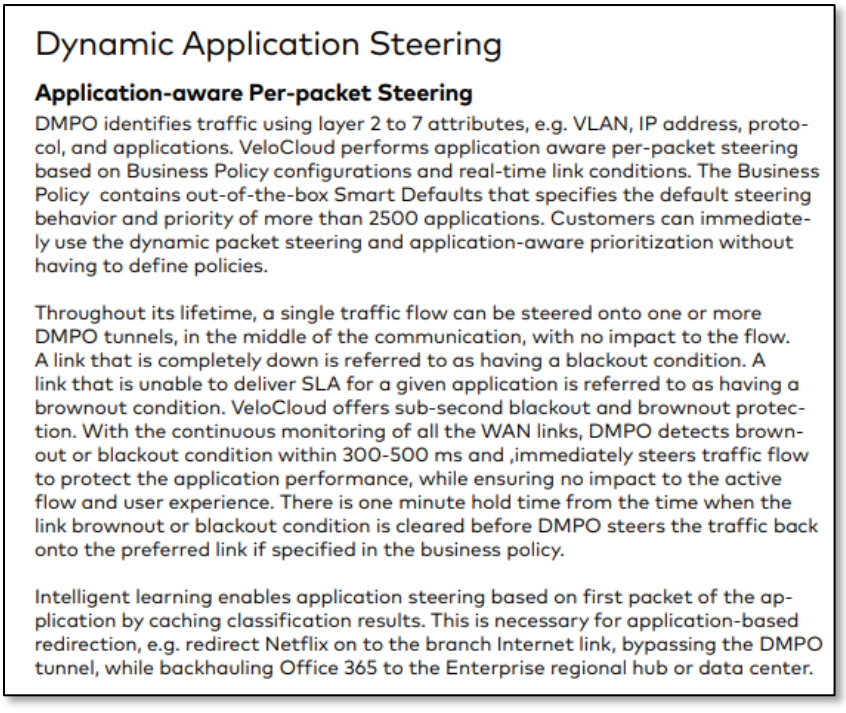
received through multiple branches. The packets can be combined and steered on a per-packet basis on different DMPO tunnels.



Transforming the MPLS Network to a Service-Ready Network

VMware SD-WAN is a pioneer in branch networking with a solution that combines the economics and flexibility of multiple WAN transports with the deployment and agility of a cloud-based service. VMware SD-WAN provides a managed, cloud-ready solution for service providers looking to deliver a managed hybrid WAN with MPLS service. With VMware SD-WAN, policies can be defined in the VMware SD-WAN Orchestrator to provide application steering according to business requirements, policy and goveranance. By compining internet links with MPLS, coupled with a centralized policy controller, service providers can meet the demands for a unified, elastic bandwidth service.In addition to higher reliability, increased available bandwidth, and improved application performance for their end customers, service providers can easily operate and integrate this new architecture into their existing MPLS network. Managed Hybrid WAN can be the next generation WAN service that is easier to manage and deploy, that can be built on the foundation of a cloud-delivered SD-WAN.

https://www.velocloud.com/content/dam/digitalmarketing/velocloud/en/documents/solution-overview-service-providers.pdf



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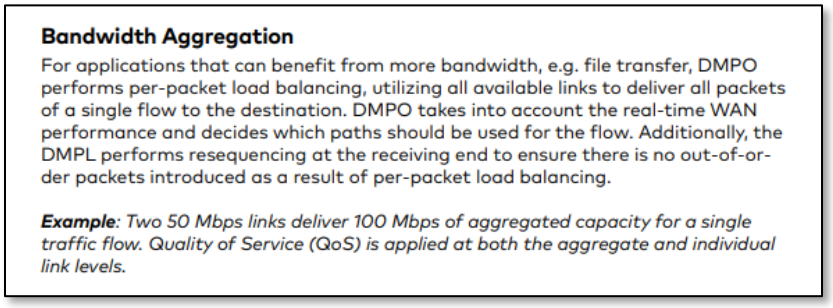
https://technologyleadership.academy/wp-content/uploads/2019/08/SDWAN-velocloud-benefits-DynamicMultipathOptimization.pdf

20. The Accused Products can perform per-packet load balancing to maintain even traffic flow through the branches of the network. Per-packet link steering can be performed automatically based on measured performance metrics, intelligent application learning, the business priority of the application, and link cost.

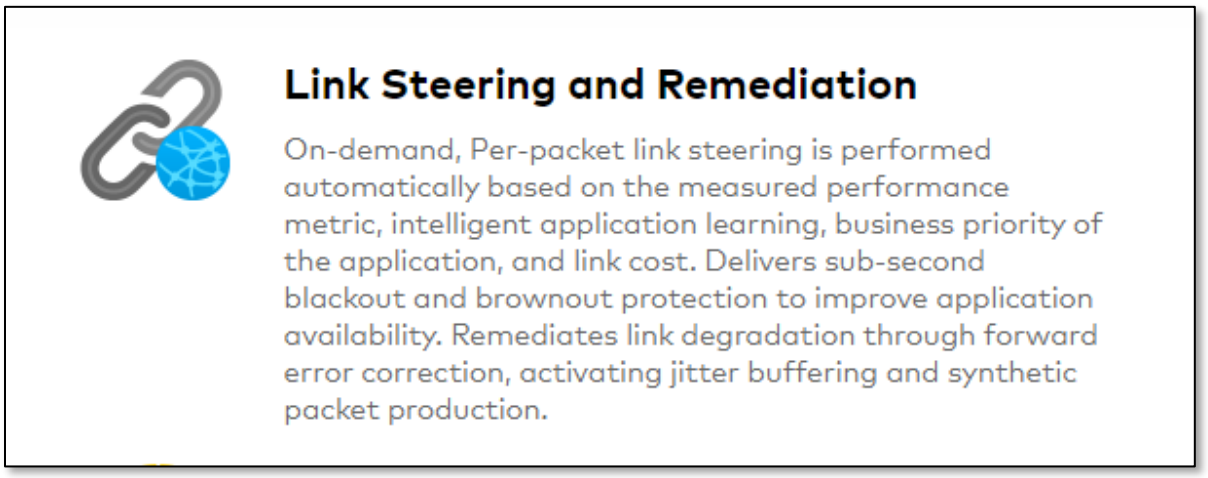


Bandwidth Aggregation

For applications that can benefit from more bandwidth, e.g. file transfer, DMPO performs per-packet load balancing, utilizing all available links to deliver all packets of a single flow to the destination. DMPO takes into account the real-time WAN performance and decides which paths should be used for the flow. Additionally, the DMPL performs resequencing at the receiving end to ensure there is no out-of-order packets introduced as a result of per-packet load balancing.

***Example**: Two 50 Mbps links deliver 100 Mbps of aggregated capacity for a single traffic flow. Quality of Service (QoS) is applied at both the aggregate and individual link levels.*

https://technologyleadership.academy/wp-content/uploads/2019/08/SDWAN-velocloud-benefits-DynamicMultipathOptimization.pdf



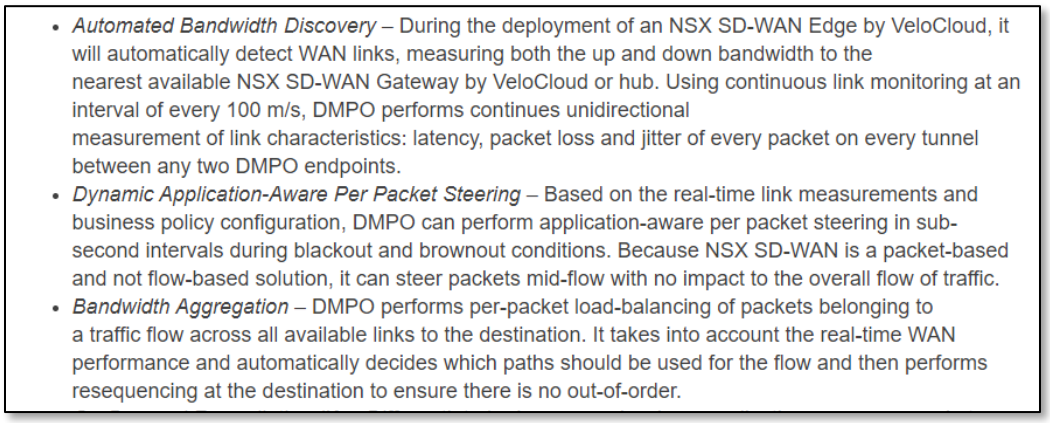
Link Steering and Remediation

On-demand, Per-packet link steering is performed automatically based on the measured performance metric, intelligent application learning, business priority of the application, and link cost. Delivers sub-second blackout and brownout protection to improve application availability. Remediates link degradation through forward error correction, activating jitter buffering and synthetic packet production.

https://www.velocloud.com/products/features

21. The Accused Products can perform per-packet load-balancing of packets belonging to a traffic flow across all available paths to the destination. On information and belief, the Accused Products use a split ratio vector in the manner claimed. For example, they take into account the real-time WAN performance, such as which paths are in use, automatically decide which paths

should be used for the flow, and then perform resequencing at the destination to ensure the packets reach the destination in a sequential manner.



- *Automated Bandwidth Discovery* – During the deployment of an NSX SD-WAN Edge by VeloCloud, it will automatically detect WAN links, measuring both the up and down bandwidth to the nearest available NSX SD-WAN Gateway by VeloCloud or hub. Using continuous link monitoring at an interval of every 100 m/s, DMPO performs continues unidirectional measurement of link characteristics: latency, packet loss and jitter of every packet on every tunnel between any two DMPO endpoints.
- *Dynamic Application-Aware Per Packet Steering* – Based on the real-time link measurements and business policy configuration, DMPO can perform application-aware per packet steering in sub-second intervals during blackout and brownout conditions. Because NSX SD-WAN is a packet-based and not flow-based solution, it can steer packets mid-flow with no impact to the overall flow of traffic.
- *Bandwidth Aggregation* – DMPO performs per-packet load-balancing of packets belonging to a traffic flow across all available links to the destination. It takes into account the real-time WAN performance and automatically decides which paths should be used for the flow and then performs resequencing at the destination to ensure there is no out-of-order.

https://blogs.vmware.com/velocloud/2018/08/02/healthcare-technology-part-3-why-providers-say-i-gotta-have-sd-wan/

22. In view of preceding paragraphs, each and every element of at least claim 1 of the '309 Patent is found in the Accused Products.

23. Defendants continue to directly infringe at least one claim of the '309 Patent, literally or under the doctrine of equivalents, by making, using, selling, offering for sale, importing, and/or distributing the Accused Products in the United States, including within this judicial district, without the authority of Brazos.

24. Defendants have received notice and actual or constructive knowledge of the '309 Patent since at least the date of service of this Complaint.

25. Since at least the date of service of this Complaint, through its actions, Defendants have actively induced product makers, distributors, retailers, and/or end users of the Accused Products to infringe the '309 Patent throughout the United States, including within this judicial district, by, among other things, advertising and promoting the use of the Accused Products in various websites, including providing and disseminating product descriptions, operating manuals,

and other instructions on how to implement and configure the Accused Products. Examples of such advertising, promoting, and/or instructing include the documents at:

- https://www.dell.com/learn/us/en/15/solutions/vmware-vcloud
- https://www.delltechnologies.com/en-us/networking/sd-wan-solution/index.htm
- https://www.dell.com/en-us/work/shop/povw/sd-wan-edge-600
- https://www.velocloud.com/content/dam/digitalmarketing/velocloud/en/documents/case-study-dell-emc.pdf
- https://technologyleadership.academy/wp-content/uploads/2019/08/SDWAN-velocloud-benefits-DynamicMultipathOptimization.pdf
- https://www.vmware.com/company/acquisitions/velocloud.html
- https://www.velocloud.com/products/features
- https://www.velocloud.com/content/dam/digitalmarketing/velocloud/en/documents/solution-overview-service-providers.pdf
- https://blogs.vmware.com/velocloud/2018/08/02/healthcare-technology-part-3-why-providers-say-i-gotta-have-sd-wan/

26. Since at least the date of service of this Complaint, through its actions, Defendants have contributed to the infringement of the '309 Patent by having others sell, offer for sale, or use the Accused Products throughout the United States, including within this judicial district, with knowledge that the Accused Products infringe the '309 Patent. The Accused Products are especially made or adapted for infringing the '309 Patent and have no substantial non-infringing use. For example, in view of the preceding paragraphs, the Accused Products contain functionality which is material to at least one claim of the '309 Patent.

JURY DEMAND

Brazos hereby demands a jury on all issues so triable.

REQUEST FOR RELIEF

WHEREFORE, Brazos respectfully requests that the Court:

(A) Enter judgment that Defendants infringe one or more claims of the '309 Patent literally and/or under the doctrine of equivalents;

(B) Enter judgment that Defendants have induced infringement and continue to induce infringement of one or more claims of the '309 Patent;

(C) Enter judgment that Defendants have contributed to and continue to contribute to the infringement of one or more claims of the '309 Patent;

(D) Award Brazos damages, to be paid by Defendants in an amount adequate to compensate Brazos for such damages, together with pre-judgment and post-judgment interest for the infringement by Defendants of the '309 Patent through the date such judgment is entered in accordance with 35 U.S.C. § 284, and increase such award by up to three times the amount found or assessed in accordance with 35 U.S.C. § 284;

(E) Declare this case exceptional pursuant to 35 U.S.C. § 285; and

(F) Award Brazos its costs, disbursements, attorneys' fees, and such further and additional relief as is deemed appropriate by this Court.

Dated: June 2, 2020

Respectfully submitted,

/s/ James L. Etheridge
James L. Etheridge
Texas State Bar No. 24059147
Ryan S. Loveless
Texas State Bar No. 24036997
Travis L. Richins
Texas State Bar No. 24061296

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COUNSEL FOR PLAINTIFF